

REMARKS/ARGUMENTS

Applicant responds herein to the Final Office Action dated October 30, 2008.

Claims 1, 4-6, 9-11, 14-15, 21 and 24-25 are pending in the application.

Independent claim 1, 6, 11 and 21 have been amended to include existing limitations of dependent claims (with dependent claims 2, 3, 7, 8, 12, 13, 22 and 23 having been accordingly cancelled) and no new issues are raised thereby. Entry of such amendments is in order and is requested.

Claims 1-15 and 21-25 were rejected under 35 USC 103(a) as being unpatentable over Hasegawa Koji (JP 11-268827) in view of Shinbara et al. (US 5,485,644), Takano (US 6,828,235) and Muraoka Yusuke JP 07-142550).

In support of the rejection the Examiner noted that the primary Koji reference, among other items, fails to teach an opening between the first and second processing chambers, a third shutter for the third opening and a fourth transport mechanism. The Shinbara et al. reference was accordingly cited as featuring “an opening and shutter (door) between each chamber”, with the chambers alluded to by the Examiner, in Shinbara et al., being chambers 3 and 4.

The Examiner made the following statement in support of the rejection:

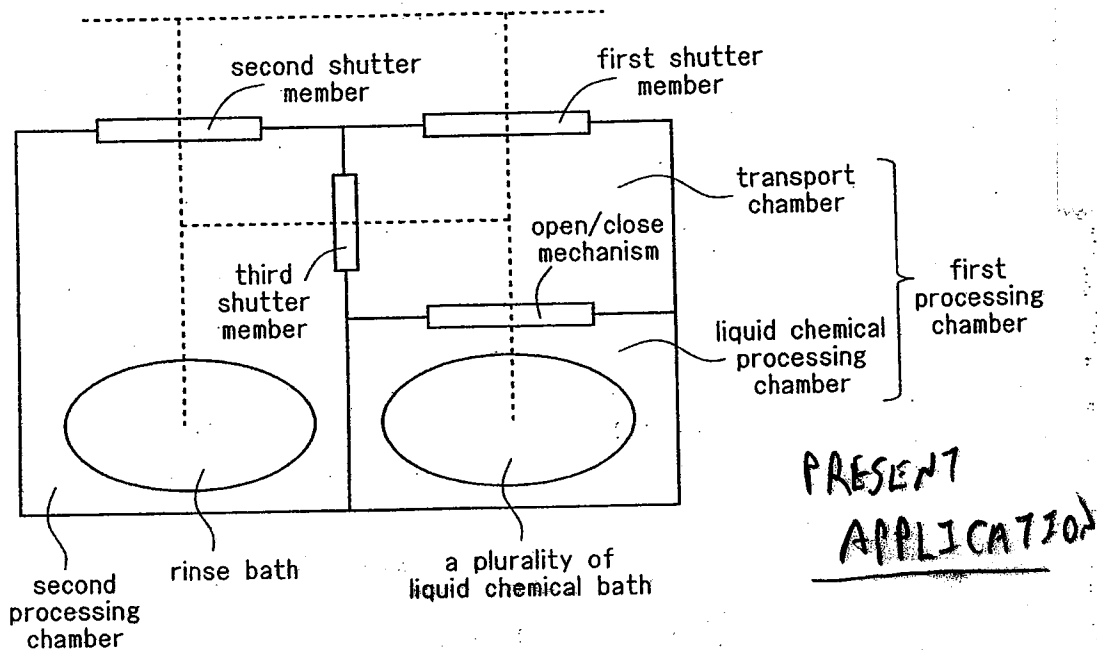
“...the motivation to provide openings between the first and second openings is to provide ease of transfer of the wafer between chambers without exiting the overall enclosed processing environment...it would have been obvious...to provide the opening/shutter, and transport mechanism of Shinbara et al. in the apparatus of Koji...”.

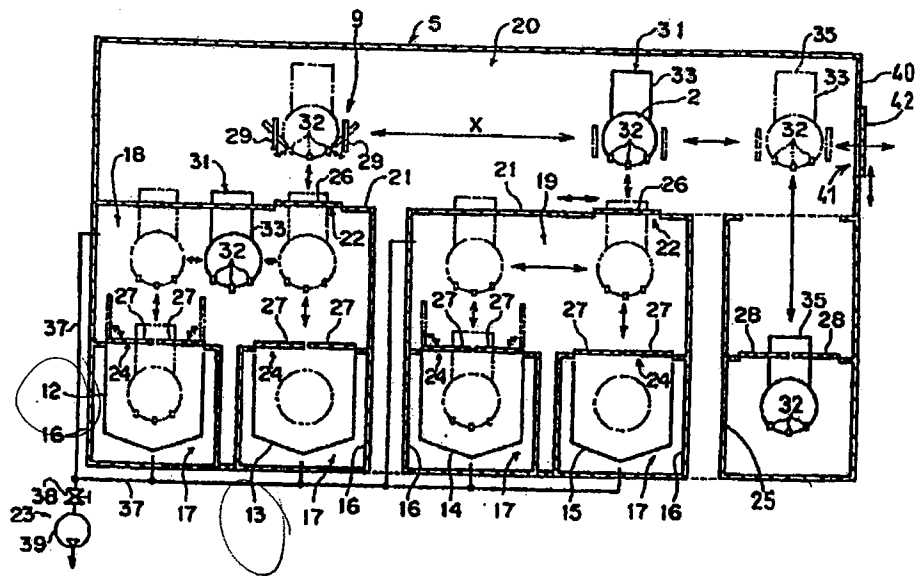
In response thereto it is initially submitted that Shinbara et al. is not a teaching of a “shutter”, as cited by the Examiner, as a teaching for one skilled in the art to modify the Koji apparatus, as suggested. Shinbara et al. does not depict or describe a “shutter” at all except for the following statement at column 3, lines 16-23:

“... Transport units 6, each comprising a multi-joint robot 7 are disposed between loader 1, units 2 to 4 and unloader 5. The transport unit 6, the loader 1, the units 2 to 4, and the unloader 5 **are each isolated by a shutter (not shown)**. Deionized water is supplied into the loader 1 and the units 2 to 4 and 6 from a deionized water supplying unit 8 through a control valve 9. The water from the loader 1 and units 2 to 4 and 6 is drained by a drainage collecting unit 10...”

Shinbara et al., specifically notes that the shutter is not shown and does not describe its placement, purpose and use except as a vague isolation element without any description of what is being isolated from what. This is not a valid teaching for one skilled in the art to modify a structure of another apparatus accordingly.

For clarity and reference thereto, the following illustrations depict, as indicated, a line drawing representation of the presently claimed apparatus, and the respective Koji and Shinbara et al. apparatus structures:



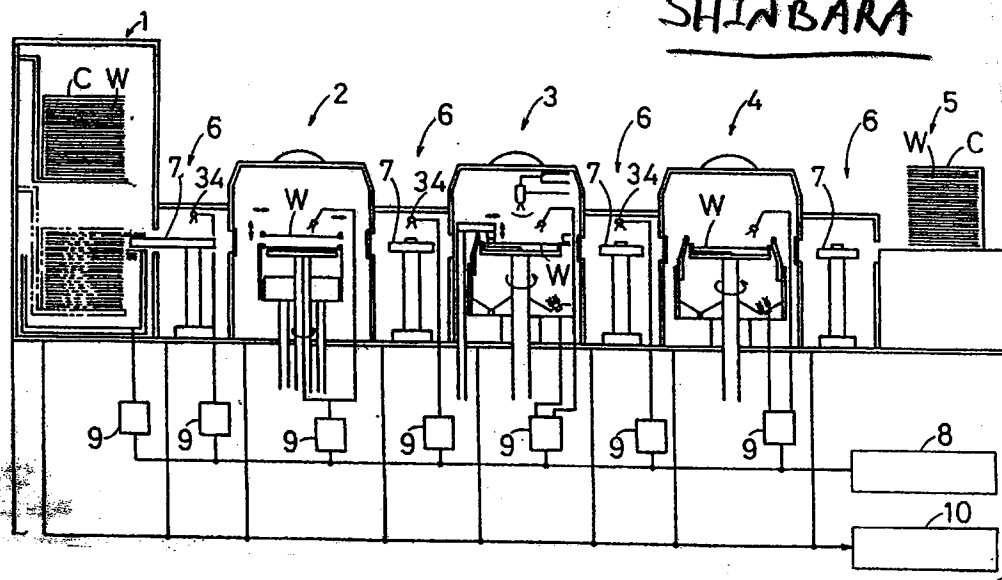


[Drawing 4]

KOJI

Fig. 2

SHINBARA



Chambers 18 and 19 of Koji are completely separated, and the exhaust jets 37 of Koji are located, as required, between the chambers 18 and 19, where the Examiner has suggested placement of shutters and a transport mechanism. Modification according to the Examiner's suggestion would directly interfere with the exhaust mechanism of Koji. In addition, the Examiner's suggested modification would require separate opposing shutters in the walls of each of chambers 18 and 19, which separate shutters must be kept in alignment. This configuration would also require simultaneous opening and closing of the opposing shutters to permit transport and to prevent leakage between chambers and the area between chambers (certainly not a simplification that one skilled in the art would consider). Furthermore, the Examiner has suggested a modification of a single transport path but has not at all addressed the failure of Koji to teach a fourth transport mechanism, an element required in the present claims. At most, the Examiner's suggestion would be to modify the transport path of a single transport but there is not the slightest scintilla of a suggestion of multiple transport mechanisms and certainly there is no teaching or suggestion of a fourth transport mechanism, as claimed, and as recognized by the Examiner as not being present in the Koji reference. The Examiner's suggested combination does not provide a fourth transport mechanism, as claimed.

A substrate processing apparatus recited in the present claims comprises "a first shutter member for exposing and blocking a first opening" and "a third shutter member for exposing and blocking a third opening". Therefore, an atmosphere inside a first processing chamber can be isolated from an external atmosphere and an atmosphere in a second processing chamber. Furthermore, the first processing chamber recited in the present claims comprises "a liquid chemical processing chamber containing a liquid chemical processing part" and "a transport chamber allowing transportation of substrates". As a result, "an atmosphere in the liquid chemical processing chamber and the transport chamber can be isolated from each other by an open/close mechanism". Thus, an atmosphere in the liquid chemical processing chamber can unfailingly be isolated from the external atmosphere and the atmosphere in the second processing chamber. It is thus possible to prevent external air and drying gas in the second processing chamber from flowing into the liquid chemical processing chamber. This also prevents a component of liquid chemicals from flowing out to the outside of the apparatus and the second processing chamber. The result is an absolute prevention of generation of a defect such as watermarks on the surface of the substrates.

Furthermore, the substrate processing apparatus recited in the present claims and as shown above, comprises "the first opening" above the first processing chamber and "a second opening" above the second processing chamber as well. Therefore, it is possible to receive substrates prior to the liquid chemical process through the first opening, and then transfer substrates being processed outside the apparatus through the second opening, after performing the liquid chemical process, pure water processing, and dry processing without the necessity of returning substrates being dry processed to the first processing chamber. This results in absolute prevention of adherence of particles to the substrates and generation of watermarks on the surface of the substrates.

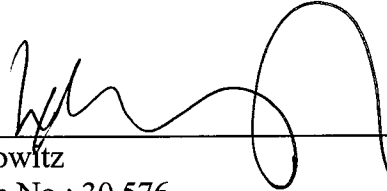
With the layout of the substrate processing apparatus as claimed, and as shown in the drawing above, the substrate processing apparatus is capable of transferring substrates along the dashed lines. This effect is possible because the first processing chamber, the second processing chamber, the first shutter member, the second shutter member, the third shutter member, the liquid chemical processing chamber and the transport chamber are arranged as shown and as claimed. On the other hand, Hasegawa Koji(JP11-268827), Shinbara et al. (US 5,485,644), and even Takano(US 6,828,235) or Muraoka Yusuke(JP07-142550) do not disclose or even suggest in any combination, the layout of the first processing chamber, the second processing chamber, the first shutter member, the second shutter member, the third shutter member, the chemical processing chamber and the transport chamber as shown above and as claimed.

The Examiner, in the Office Action, indicated elements "18" and "19" of Koji as being the first and the second processing chambers and element "22" of Koji as the first and the second openings. Additionally the Examiner indicated that element "20" of Koji as the transport chamber. However, element "20" is located above elements "18" and "22" thereby providing a totally different configuration shown above and as claimed. Chamber "18" of Koji cannot be regarded as the transport chamber since element "27" is not the open/close mechanism capable of being isolated from the atmosphere. If element "18" of the Hasegawa Koji would be the transport chamber, it would not meet the claim requirement of "an atmosphere in the liquid chemical processing part and the transport chamber can be isolated from each other by an open/close mechanism".

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

THIS CORRESPONDENCE IS
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January 30, 2008

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Max Moskowitz', is written over a horizontal line.

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